

EMC TEST REPORT

Dates of Tests: July 18-20, 2017
Test Report S/N: LR500122302R
Test Site : LTA Co., Ltd.

Model No.

XNP-6040HP

APPLICANT

Hanwha Vision Co., Ltd

Manufacturing Description : NETWORK CAMERA
Manufacturer : Hanwha Vision Co., Ltd
Brand : -
Model name : XNP-6040HP
Additional Model : -
Test Device Serial No.: : Identification
Rule Part(s) : AS/NZS CISPR 32:2013
CISPR 32 Ed1.0

Date of issue : February 21, 2023

This test report is issued under the authority of:

The test was supervised by:



Young Kyu Shin, Technical Manager



Jong Chae Kim, Test Engineer

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NVLAP LAB CODE 200723-0

| Revision | Date of issue | Test report No. | Description |
|----------|---------------|-----------------|---|
| 0 | 07.21.2017 | LR500111707AF | Initial |
| 1 | 21.02.2023 | LR500112302R | Change company name and manufacturer name |



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1. General information's

1-1 Test Performed

Company name : **LTA Co., Ltd.**
 Address : 243 Jubug-ri, Yangji-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do 449-822, Korea
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

| Agency | Country | Accreditation No. | Validity | Reference |
|--------|---------|-------------------------|------------|-----------------------|
| NVLAP | U.S.A | 200723-0 | 2017-09-30 | ECT accredited Lab. |
| RRA | KOREA | KR0049 | - | EMC accredited Lab. |
| FCC | U.S.A | 649054 | 2019-04-13 | FCC CAB |
| VCCI | JAPAN | R-2133(10 m), C-2307 | 2017-06-21 | VCCI registration |
| VCCI | JAPAN | T-2009 | 2017-12-23 | VCCI registration |
| VCCI | JAPAN | G-847 | 2018-12-13 | VCCI registration |
| IC | CANADA | 5799A-1 | 2019-11-07 | IC filing |
| KOLAS | KOREA | NO.551 | 2017-01-08 | KOLAS accredited Lab. |

2. Information's about test item

2-1 Client / Manufacturer

Company name : Hanwha Vision Co., Ltd
 Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
 Telephone /Facsimile : +82-70-7147-8753(<http://hanhwa-security.com>)

Factory #1

Company name : HANWHA VISION VIETNAM COMPANY LIMITED
 Address : Lot O-2, Que Vo Industrial Zone extended area ,Nam Son commune, Bac Ninh city,Bac Ninh province, Vietnam

Factory #2

Company name : D-TECH CO.,LTD.
 Address : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

2-2 Equipment Under Test (EUT)

Class : A
 Category : NETWORK CAMERA
 Brand : -
 Model name : XNP-6040HP
 Additional model name : -
 Additional model differences : -
 Serial number : Identification
 Date of receipt : July 20, 2017
 EUT condition : Pre-production, not damaged
 Interface Ports : DC IN, LAN, ALARM, RS485, SPEAKER, MIC
 Power rating : DC 12 V
 Test memory size : -
 Modulator : -
 Crystal/Oscillator(s) : -
 Firmware version : xxxx

2-3 Modification

-NONE

2-4 Test conditions

Temp. / Humid. / Pressure : +(24-26) °C / (45-59) %RH
 Tested Model : XNP-6040HP
 Operating mode : Capture mode (Adapter, PoE)
 Tested Voltage : 230 Vac , 50 Hz

2-5 Ancillary Equipment / Capture mode (Adapter)

| Equipment | Model No. | Serial No. | Manufacturer |
|--------------|------------|------------|--------------|
| Notebook | P56 | N/A | HANSUNG |
| Speaker | N/A | N/A | N/A |
| Controller | CNB-SC3100 | N/A | CNB |
| Mobile Phone | IM-A770K | N/A | SKY |
| Alarm | DS-360 | N/A | dmcall |
| Adapter | 24CB022F | N/A | CWT |

/ Capture mode (PoE)

| Equipment | Model No. | Serial No. | Manufacturer |
|--------------|----------------|------------|--------------|
| Notebook | P56 | N/A | HANSUNG |
| Speaker | N/A | N/A | N/A |
| Controller | CNB-SC3100 | N/A | CNB |
| Mobile Phone | IM-A770K | N/A | SKY |
| Alarm | DS-360 | N/A | dmcall |
| PoE | NEXT-PEG4806JT | N/A | NEXT |



3. Test Report

3.1 Summary of tests

| Parameter | Applied Standard | Status |
|--------------------|---------------------|--------|
| I. Emission | | |
| Radiated Emission | AS/NZS CISPR32:2013 | C |
| Conducted Emission | AS/NZS CISPR32:2013 | C |

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: We did not test EN61000-3-2 (Harmonic current emissions) for the **XNP-6040HP** because equipment whose rated power is less or equal 75W don't need to be tested.

Note 3: We did not test EN 61000-3-3 (Flicker) for the **XNP-6040HP** because of clause 6.1, this standard Predicate as follows: "Devices which produce no significant voltage dips or flicker with a certain probability have not to be tested."

Note 4: The data in this test report are traceable to the national or international standards.



3.2 EMISSION

3.2.1 Conducted emissions

Definition:

The test assesses the ability of the EUT to limit its internal noise from being present on the AC mains Power In/Output/Telecommunication ports.

We were performed the test according to LTA procedure LTA-QI-04.

| | |
|-----------------------------|-------------------------------|
| Test method | : AS/NZS CISPR32:2013 |
| Measurement Frequency range | : 150 kHz - 30 MHz |
| Measurement RBW | : 9 kHz |
| Test mode | : Capture mode (Adapter, PoE) |
| Result | : Complies |

Measurement Data:

- Refer to the Next page (Maximum emission configuration)
- No other emissions were detected at a level greater than 20 dB below limit

A sample calculation:

COR. F (correction factor)= LISN Insertion loss + Cable loss

Emission Level= meter reading + COR.F

Limits for conducted disturbance at the mains ports of class A ITE

| Frequency Range | Quasi-peak | Average |
|------------------|------------|---------|
| (0.15 - 0.5) MHz | 79 dBuV | 66 dBuV |
| (0.5 – 30) MHz | 73 dBuV | 60 dBuV |

Note: The limits will decrease with the frequency logarithmically within 0.15MHz to 0.5MHz

Limits for conducted disturbance at the mains ports of class B ITE

| Frequency Range | Quasi-peak | Average |
|------------------|----------------|----------------|
| (0.15 – 0.5) MHz | (66 – 56) dBuV | (56 - 46) dBuV |
| (0.5 – 5) MHz | 56 dBuV | 46 dBuV |
| (5 – 30) MHz | 60 dBuV | 50 dBuV |

Note: The limits will decrease with the frequency logarithmically within 0.15 MHz to 0.5 MHz

TEST EQUIPMENT USED: 01, 02, 03, 07, 08, 27

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class A equipment

| Frequency Range | Voltage limits | | Current limits | |
|------------------|----------------|----------------|----------------|----------------|
| | Quasi-peak | Average | Quasi-peak | Average |
| (0.15 - 0.5) MHz | (97 – 87) dBuV | (84 – 74) dBuV | (53 – 43) dBuV | (40 – 30) dBuV |
| (0.5 – 30) MHz | 87 dBuV | 74 dBuV | 43 dBuV | 30 dBuV |

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class B equipment

| Frequency Range | Voltage limits | | Current limits | |
|------------------|----------------|----------------|----------------|----------------|
| | Quasi-peak | Average | Quasi-peak | Average |
| (0.15 - 0.5) MHz | (84 – 74) dBuV | (74 – 64) dBuV | (40 – 30) dBuV | (30 – 20) dBuV |
| (0.5 – 30) MHz | 74 dBuV | 64 dBuV | 30 dBuV | 20 dBuV |

Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150/I = 44$ dB)

Conducted emissions (LINE) / Capture mode (Adapter)



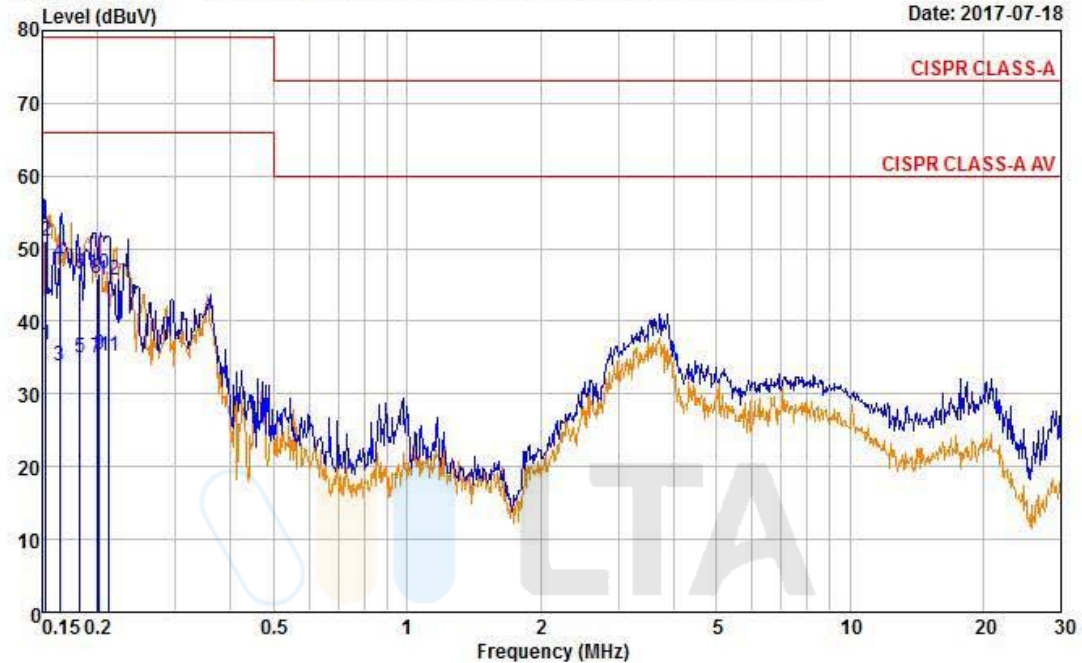
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Fax: +82-31-3236010

EUT / Model No. : XNP-6040HP Phase : LINE
Test Mode : Capture mode (Adapter) Test Power : 230 / 50
Temp. / Humi. : 26 / 59 Test Engineer : KANG M G

Data: 1474

File: D:\Conducted Data\2017\LTA_Conduction_2017_07.EM6 (1478)

Date: 2017-07-18



| Freq | RD | RD | C.F | Result | Result | Limit | Limit | Margin | Margin |
|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| MHz | QP | AV | | QP | AV | QP | AV | QP | AV |
| | dBuV | dBuV | dB | dBuV | dBuV | dBuV | dBuV | dB | dB |
| 0.153 | 41.05 | 26.73 | 10.03 | 51.08 | 36.76 | 79.00 | 66.00 | 27.92 | 29.24 |
| 0.164 | 38.05 | 23.92 | 10.02 | 48.07 | 33.94 | 79.00 | 66.00 | 30.93 | 32.06 |
| 0.182 | 36.50 | 25.00 | 10.02 | 46.52 | 35.02 | 79.00 | 66.00 | 32.48 | 30.98 |
| 0.200 | 35.93 | 25.07 | 10.01 | 45.94 | 35.08 | 79.00 | 66.00 | 33.06 | 30.92 |
| 0.202 | 36.47 | 25.33 | 10.01 | 46.48 | 35.34 | 79.00 | 66.00 | 32.52 | 30.66 |
| 0.213 | 35.67 | 25.09 | 10.01 | 45.68 | 35.10 | 79.00 | 66.00 | 33.32 | 30.90 |

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (NEUTRAL) / Capture mode (Adapter)



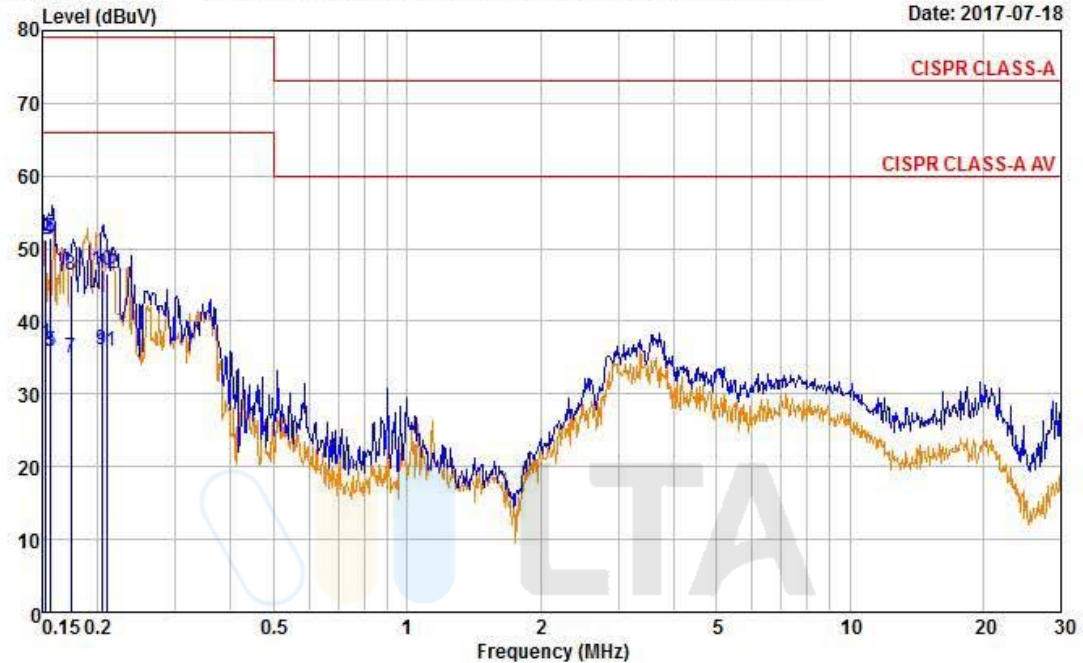
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EUT / Model No. : XNP-6040HP Phase : NEUTRAL
Test Mode : Capture mode (Adapter) Test Power : 230 / 50
Temp. / Humi. : 26 / 59 Test Engineer : KANG M G

Data: 1478

File: D:\Conducted Data\2017\LTA_Conduction_2017_07.EM6 (1478)

Date: 2017-07-18



| Freq | RD | RD | C.F | Result | Result | Limit | Limit | Margin | Margin |
|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| MHz | QP | AV | | QP | AV | QP | AV | QP | AV |
| | dBuV | dBuV | dB | dBuV | dBuV | dBuV | dBuV | dB | dB |
| 0.153 | 41.18 | 27.00 | 10.08 | 51.26 | 37.08 | 79.00 | 66.00 | 27.74 | 28.92 |
| 0.156 | 41.15 | 25.74 | 10.08 | 51.23 | 35.82 | 79.00 | 66.00 | 27.77 | 30.18 |
| 0.157 | 41.43 | 25.82 | 10.08 | 51.51 | 35.90 | 79.00 | 66.00 | 27.49 | 30.10 |
| 0.174 | 36.24 | 24.85 | 10.08 | 46.32 | 34.93 | 79.00 | 66.00 | 32.68 | 31.07 |
| 0.204 | 36.98 | 25.95 | 10.08 | 47.06 | 36.03 | 79.00 | 66.00 | 31.94 | 29.97 |
| 0.210 | 36.58 | 25.85 | 10.08 | 46.66 | 35.93 | 79.00 | 66.00 | 32.34 | 30.07 |

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (LINE) / Capture mode (PoE)



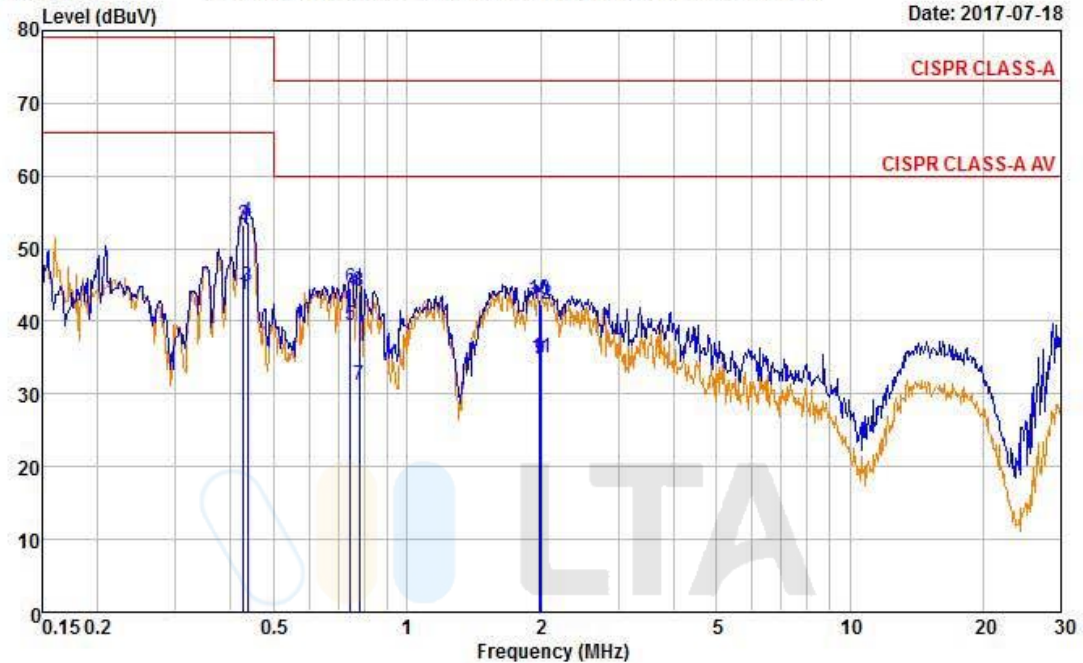
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EUT / Model No. : XNP-6040HP Phase : LINE
Test Mode : Capture mode (PoE) Test Power : 230 / 50
Temp. / Humi. : 26 / 59 Test Engineer : KANG M G

Data: 1538

File: D:\Conducted Data\2017\LTA_Conduction_2017_07.EM6 (1542)

Date: 2017-07-18



| Freq | RD | RD | C.F | Result | Result | Limit | Limit | Margin | Margin |
|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| MHz | QP | AV | | QP | AV | QP | AV | QP | AV |
| | dBuV | dBuV | dB | dBuV | dBuV | dBuV | dBuV | dB | dB |
| 0.427 | 43.32 | 33.68 | 10.00 | 53.32 | 43.68 | 79.00 | 66.00 | 25.68 | 22.32 |
| 0.437 | 43.62 | 34.85 | 10.00 | 53.62 | 44.85 | 79.00 | 66.00 | 25.38 | 21.15 |
| 0.746 | 34.51 | 29.55 | 10.00 | 44.51 | 39.55 | 73.00 | 60.00 | 28.49 | 20.45 |
| 0.781 | 34.15 | 21.25 | 10.00 | 44.15 | 31.25 | 73.00 | 60.00 | 28.85 | 28.75 |
| 1.994 | 32.87 | 24.71 | 10.06 | 42.93 | 34.77 | 73.00 | 60.00 | 30.07 | 25.23 |
| 2.015 | 32.37 | 24.89 | 10.06 | 42.43 | 34.95 | 73.00 | 60.00 | 30.57 | 25.05 |

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

Conducted emissions (NEUTRAL) / Capture mode (PoE)



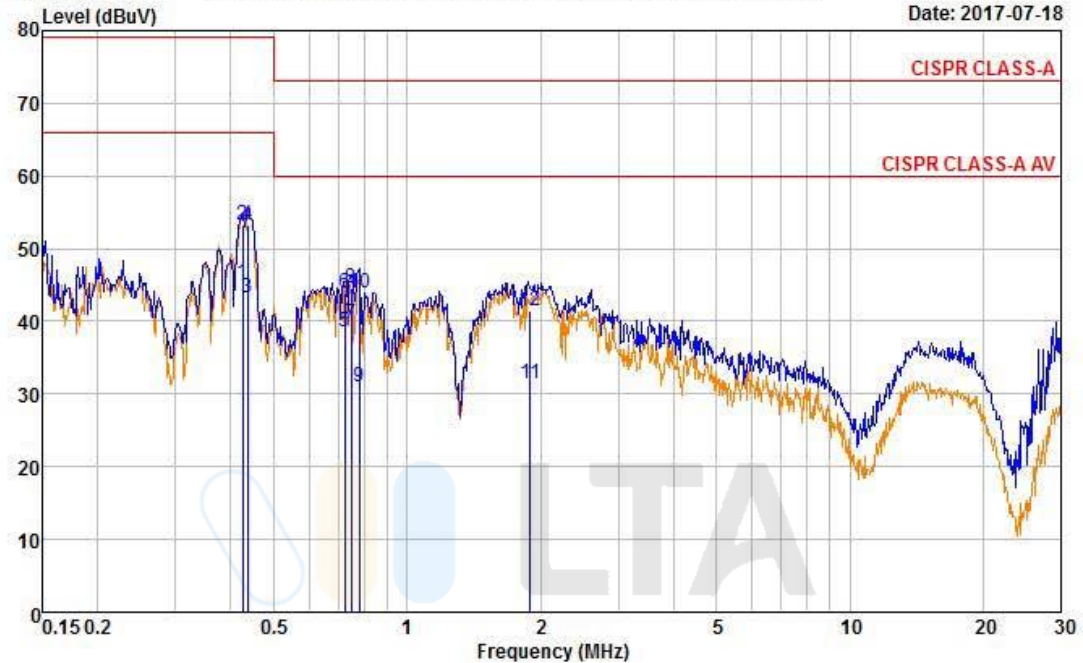
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Fax: +82-31-3236010

| | |
|--------------------------------|--------------------------|
| EUT / Model No. : XNP-6040HP | Phase : NEUTRAL |
| Test Mode : Capture mode (PoE) | Test Power : 230 / 50 |
| Temp. / Humi. : 26 / 59 | Test Engineer : KANG M G |

Data: 1542

File: D:\Conducted Data\2017\LTA_Conduction_2017_07.EM6 (1542)

Date: 2017-07-18



| Freq | RD | RD | C.F | Result | Result | Limit | Limit | Margin | Margin |
|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| MHz | QP | AV | | QP | AV | QP | AV | QP | AV |
| | dBuV | dBuV | dB | dBuV | dBuV | dBuV | dBuV | dB | dB |
| 0.425 | 43.25 | 35.21 | 10.08 | 53.33 | 45.29 | 79.00 | 66.00 | 25.67 | 20.71 |
| 0.435 | 43.27 | 33.04 | 10.08 | 53.35 | 43.12 | 79.00 | 66.00 | 25.65 | 22.88 |
| 0.723 | 33.74 | 28.58 | 10.08 | 43.82 | 38.66 | 73.00 | 60.00 | 29.18 | 21.34 |
| 0.749 | 34.50 | 29.64 | 10.08 | 44.58 | 39.72 | 73.00 | 60.00 | 28.42 | 20.28 |
| 0.781 | 33.89 | 20.90 | 10.08 | 43.97 | 30.98 | 73.00 | 60.00 | 29.03 | 29.02 |
| 1.894 | 31.23 | 21.37 | 10.13 | 41.36 | 31.50 | 73.00 | 60.00 | 31.64 | 28.50 |

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

3.2.2 Radiated Emission

Definition:

The test assesses the ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

We were performed the test according to LTA procedure LTA-QI-04.

| | |
|-----------------------------|--|
| Test method | : AS/NZS CISPR32:2013 |
| Measuring Distance | : 10 m for below 1 GHz / 3 m for above 1 GHz |
| Measurement Frequency range | : 30 MHz – 1 000 MHz |
| Measurement RBW | : 120 kHz @ 10 m / 1 MHz @ 3 m |
| Test mode | : Capture mode (Adapter, PoE) |
| Result | : Complies |

Measurement Data:

- Refer to the Next page (Maximum emission configuration)
- No other emissions were detected at a level greater than 20 dB below limit
- The highest internal source of an EUT is above 108 MHz, the measurement shall only be made up to 1 GHz.
(The highest internal source of an EUT : above 108 MHz)

A sample calculation:

$COR.F \text{ (correction factor)} = \text{Antenna factor} + \text{Cable loss} - \text{Amp.gain} - \text{Distance correction}$

$\text{Emission Level} = \text{meter reading} + COR.F$

TEST EQUIPMENT USED: 13, 14, 15, 19, 21, 23, 27

Limit of 10 m for below 1 GHz

CLASS A

| Frequency Range | Quasi-peak |
|-------------------|------------|
| (30 – 230) MHz | 40 dBuV/m |
| (230 – 1 000) MHz | 47 dBuV/m |

CLASS B

| Frequency Range | Quasi-peak |
|-------------------|------------|
| (30 – 230) MHz | 30 dBuV/m |
| (230 – 1 000) MHz | 37 dBuV/m |

Limit of 3m for above 1 GHz

CLASS A

| Frequency Range | Average Limit @ 3m (dB μ V/m) | Peak limit @ 3m (dB μ V/m) |
|---------------------|--------------------------------------|-----------------------------------|
| (1 000 – 3 000) MHz | 56 | 76 |
| (3 000 – 6 000) MHz | 60 | 80 |

NOTE:

The lower limit applies at the transition frequency.

CLASS B

| Frequency Range | Average Limit @ 3m (dB μ V/m) | Peak limit @ 3m (dB μ V/m) |
|---------------------|--------------------------------------|-----------------------------------|
| (1 000 – 3 000) MHz | 50 | 70 |
| (3 000 – 6 000) MHz | 54 | 74 |

NOTE:

The lower limit applies at the transition frequency.

TEST EQUIPMENT USED: 13, 14, 15, 19, 21, 23, 27

Radiated Emission (Below 1 GHz) / Capture mode (Adapter) _ V

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EUT/Model No.: XNP-6040HP

Temp/Humi: 25 / 48

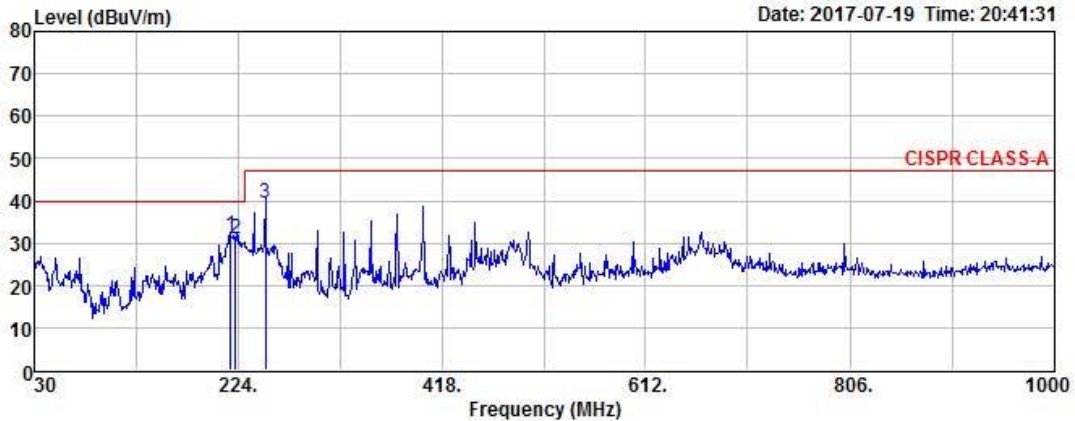
Test Mode : Capture mode (Adapter)

Tested by: KANG M G

Data: 1978

File: C:\Program Files (x86)\e3\1707-1.EM6 (2056)

Date: 2017-07-19 Time: 20:41:31



| Freq MHz | Reading dBuV | C.F dB | Result QP dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Polarity |
|-------------|-----------------|-----------|------------------------|-----------------|--------------|--------------|--------------|----------|
| 216.80 | 48.06 | -16.41 | 31.65 | 40.00 | 8.35 | 123 | 201 | VERTICAL |
| 221.40 | 47.09 | -16.12 | 30.97 | 40.00 | 9.03 | 114 | 118 | VERTICAL |
| 250.01 | 54.48 | -14.88 | 39.60 | 47.00 | 7.40 | 120 | 196 | VERTICAL |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / Capture mode (Adapter) _ H



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EUT/Model No.: XNP-6040HP

Temp/Humi: 25 / 48

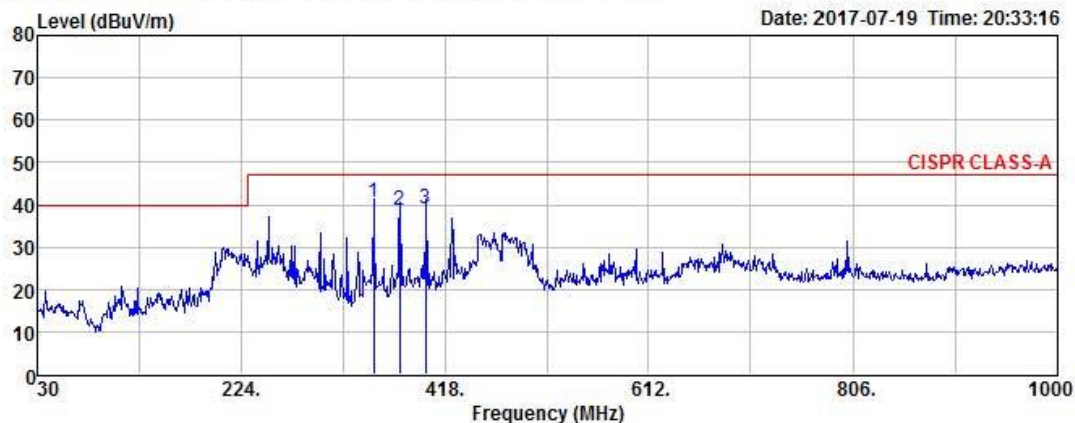
Test Mode : Capture mode (Adapter)

Tested by: KANG M G

Data: 1977

File: C:\Program Files (x86)\e3\1707-1.EM6 (2056)

Date: 2017-07-19 Time: 20:33:16



| Freq | Reading | C.F | Result | Limit | Margin | Height | Angle | Polarity |
|--------|---------|--------|--------------|--------|--------|--------|-------|------------|
| MHz | dBuV | dB | QP dBuV/m | dBuV/m | dB | cm | deg | |
| 350.10 | 52.76 | -12.36 | 40.40 | 47.00 | 6.60 | 288 | 115 | HORIZONTAL |
| 375.00 | 50.34 | -11.82 | 38.52 | 47.00 | 8.48 | 290 | 261 | HORIZONTAL |
| 400.01 | 50.64 | -11.46 | 39.18 | 47.00 | 7.82 | 242 | 293 | HORIZONTAL |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / Capture mode (PoE) _ V



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EUT/Model No.: XNP-6040HP

Temp/Humi: 25 / 48

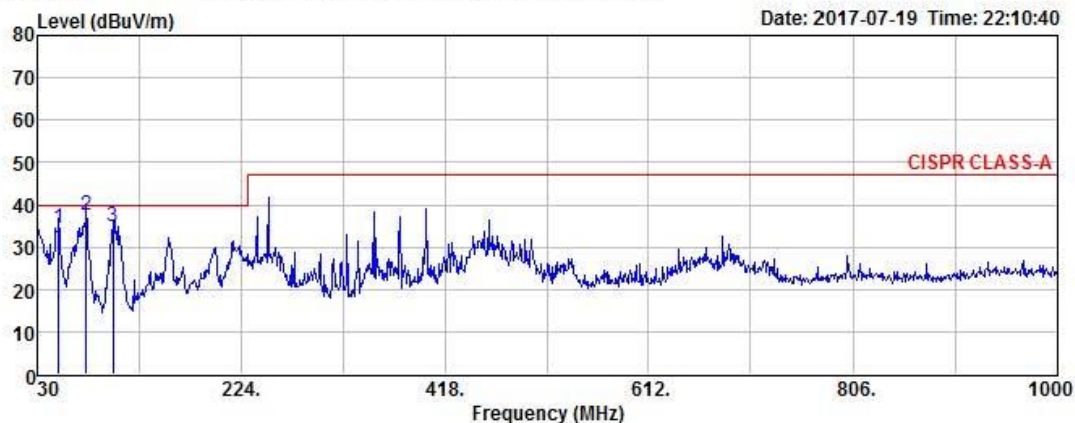
Test Mode : Capture mode (PoE)

Tested by: KANG M G

Data: 2000

File: C:\Program Files (x86)\e3\1707-1.EM6 (2056)

Date: 2017-07-19 Time: 22:10:40



| Freq | Reading | C.F | Result | Limit | Margin | Height | Angle | Polarity |
|--------|---------|--------|--------------|--------|--------|--------|-------|----------|
| MHz | dBuV | dB | QP dBuV/m | dBuV/m | dB | cm | deg | |
| 50.56 | 49.41 | -14.86 | 34.55 | 40.00 | 5.45 | 135 | 264 | VERTICAL |
| 76.63 | 55.90 | -18.57 | 37.33 | 40.00 | 2.67 | 174 | 66 | VERTICAL |
| 101.90 | 52.12 | -17.48 | 34.64 | 40.00 | 5.36 | 115 | 318 | VERTICAL |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Below 1 GHz) / Capture mode (PoE) _ H



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EUT/Model No.: XNP-6040HP

Temp/Humi: 25 / 48

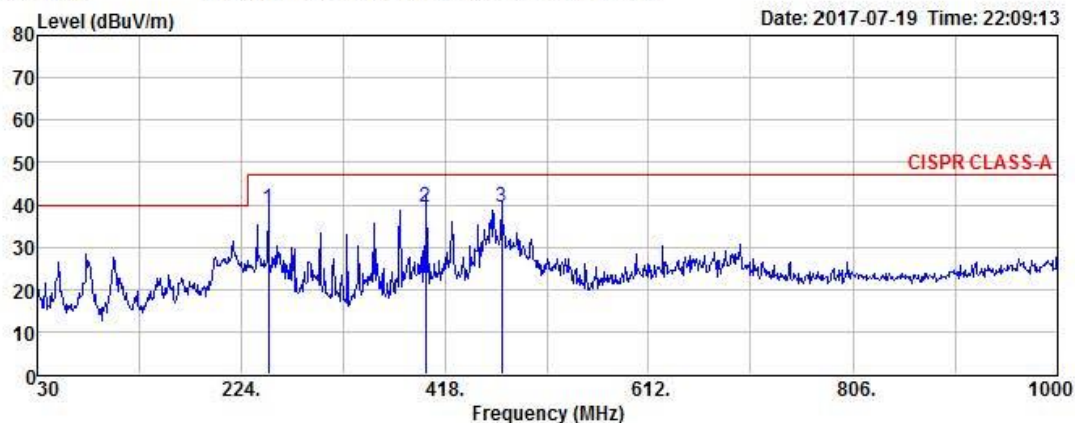
Test Mode : Capture mode (PoE)

Tested by: KANG M G

Data: 1999

File: C:\Program Files (x86)\e3\1707-1.EM6 (2056)

Date: 2017-07-19 Time: 22:09:13



| Freq | Reading | C.F | Result | Limit | Margin | Height | Angle | Polarity |
|--------|---------|--------|--------------|--------|--------|--------|-------|------------|
| MHz | dBuV | dB | QP dBuV/m | dBuV/m | dB | cm | deg | |
| 250.10 | 54.04 | -14.88 | 39.16 | 47.00 | 7.84 | 345 | 277 | HORIZONTAL |
| 400.00 | 50.88 | -11.46 | 39.42 | 47.00 | 7.58 | 351 | 90 | HORIZONTAL |
| 472.10 | 49.70 | -10.23 | 39.47 | 47.00 | 7.53 | 266 | 184 | HORIZONTAL |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emission (Above 1 GHz) / Capture mode (Adapter)

EUT/Model No.: XNP-6040HP

Temp/Humi: 24 / 45

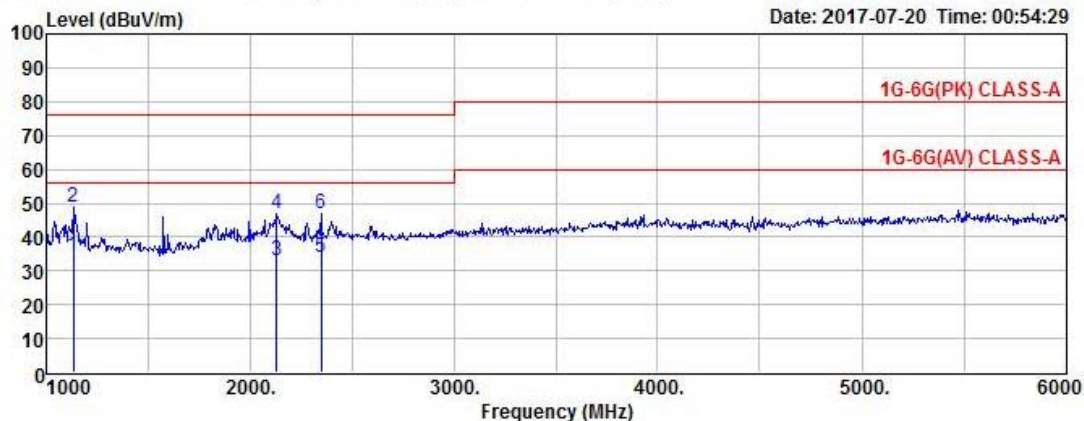
Test Mode : Capture mode (Adapter)

Tested by: KANG M G

Data: 2032

File: C:\Program Files (x86)\e3\1707-1.EM6 (2057)

Date: 2017-07-20 Time: 00:54:29



EUT/Model No.: XNP-6040HP

Temp/Humi: 24 / 45

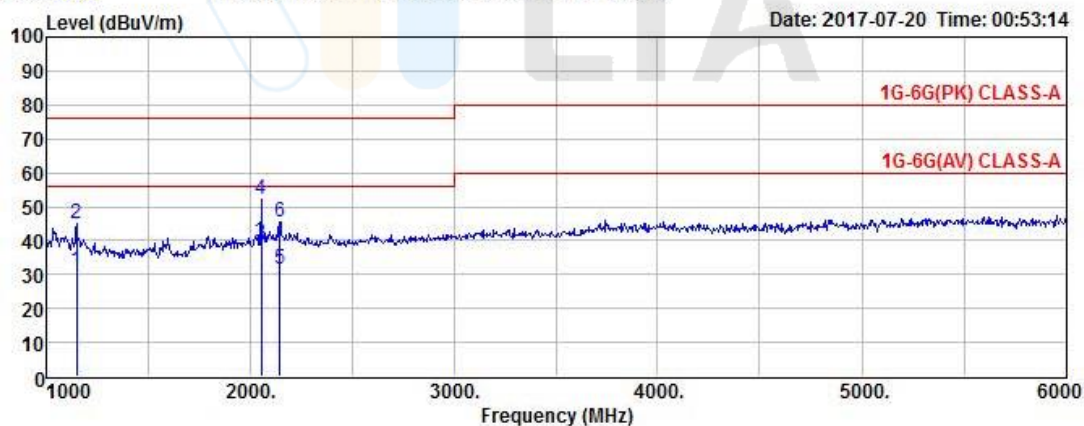
Test Mode : Capture mode (Adapter)

Tested by: KANG M G

Data: 2031

File: C:\Program Files (x86)\e3\1707-1.EM6 (2057)

Date: 2017-07-20 Time: 00:53:14



Manufacture : HANWHA TECHWIN CO., LTD.

Test Date

Temp.:
[°C]Humidity:
[%]Barometric
[mbar]

Model : XNP-6040HP

2017/7/20

24

45

TEST mode : Capture mode (Adapter)

| Freq.(MHz) | Reading(PK) | Reading(AV) | C.F | Result(PK) | Result(AV) | Limit(PK) | Limit(AV) | Margin(PK) | Margin(AV) | Height | Angle | Polarity |
|------------|-------------|-------------|-------|------------|------------|-----------|-----------|------------|------------|--------|-------|----------|
| MHz | dBuV | dBuV | dB | dBuV/m | dBuV/m | dBuV/m | dBuV/m | dB | dB | cm | deg | Hor/Ver |
| 1150.0 | 53.2 | 39.5 | -5.87 | 47.37 | 33.61 | 76.0 | 56.0 | 28.63 | 22.39 | 100 | 27 | H |
| 2055.0 | 54.5 | 41.8 | -0.23 | 54.23 | 41.55 | 76.0 | 56.0 | 21.77 | 14.45 | 100 | 267 | H |
| 2145.0 | 47.7 | 33.9 | 0.17 | 47.86 | 34.05 | 76.0 | 56.0 | 28.14 | 21.95 | 100 | 189 | H |
| 1135.0 | 57.0 | 42.9 | -6.05 | 50.93 | 36.83 | 76.0 | 56.0 | 25.07 | 19.17 | 100 | 212 | V |
| 2130.0 | 48.9 | 35.2 | 0.12 | 49.01 | 35.30 | 76.0 | 56.0 | 26.99 | 20.70 | 100 | 284 | V |
| 2350.0 | 48.1 | 35.0 | 1.14 | 49.27 | 36.13 | 76.0 | 56.0 | 26.73 | 19.87 | 100 | 326 | V |

Radiated Emission (Above 1 GHz) / Capture mode (PoE)

EUT/Model No.: XNP-6040HP

Temp/Humi: 24 / 45

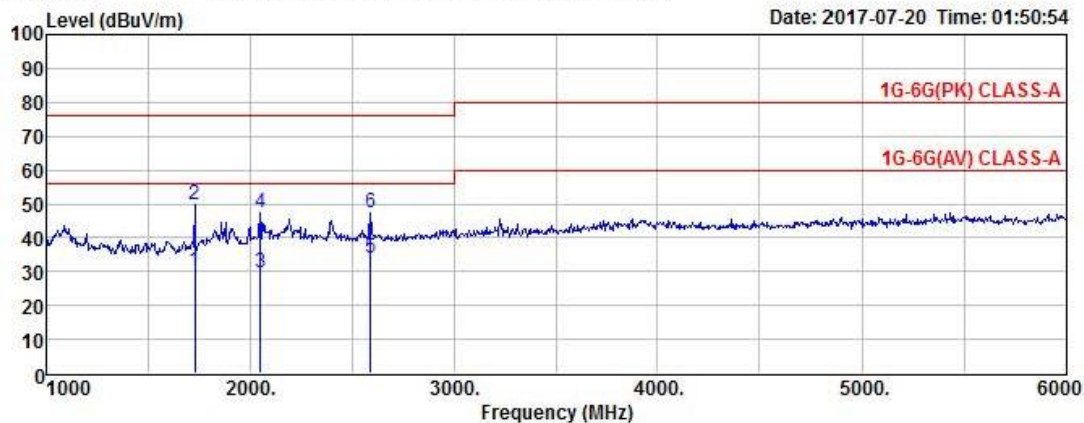
Test Mode : Capture mode (PoE)

Tested by: KANG M G

Data: 2052

File: C:\Program Files (x86)\e3\1707-1.EM6 (2057)

Date: 2017-07-20 Time: 01:50:54



EUT/Model No.: XNP-6040HP

Temp/Humi: 24 / 45

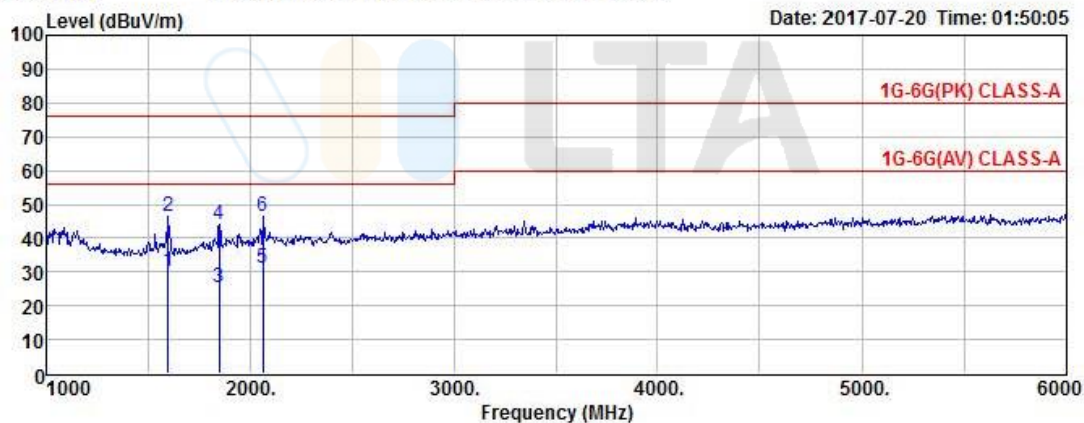
Test Mode : Capture mode (PoE)

Tested by: KANG M G

Data: 2051

File: C:\Program Files (x86)\e3\1707-1.EM6 (2057)

Date: 2017-07-20 Time: 01:50:05



Manufacture : HANWHA TECHWIN CO., LTD.

Test Date

Temp.:
[°C]Humidity:
[%]Barometric
[mbar]

Model : XNP-6040HP

2017/7/20

24

45

TEST mode : Capture mode (PoE)

| Freq.(MHz) | Reading(PK) | Reading(AV) | C.F | Result(PK) | Result(AV) | Limit(PK) | Limit(AV) | Margin(PK) | Margin(AV) | Height | Angle | Polarity |
|------------|-------------|-------------|-------|------------|------------|-----------|-----------|------------|------------|--------|-------|----------|
| MHz | dBuV | dBuV | dB | dBuV/m | dBuV/m | dBuV/m | dBuV/m | dB | dB | cm | deg | Hor/Ver |
| 1600.0 | 52.7 | 36.4 | -4.01 | 48.71 | 32.37 | 76.0 | 56.0 | 27.29 | 23.63 | 100 | 159 | H |
| 1850.0 | 47.6 | 29.2 | -1.55 | 46.08 | 27.63 | 76.0 | 56.0 | 29.92 | 28.37 | 100 | 147 | H |
| 2065.0 | 49.0 | 33.5 | -0.18 | 48.79 | 33.31 | 76.0 | 56.0 | 27.21 | 22.69 | 100 | 311 | H |
| 1730.0 | 54.3 | 35.0 | -2.45 | 51.89 | 32.53 | 76.0 | 56.0 | 24.11 | 23.47 | 100 | 245 | V |
| 2050.0 | 49.7 | 32.2 | -0.25 | 49.45 | 31.92 | 76.0 | 56.0 | 26.55 | 24.08 | 100 | 219 | V |
| 2590.0 | 47.0 | 33.4 | 2.66 | 49.69 | 36.04 | 76.0 | 56.0 | 26.31 | 19.96 | 100 | 110 | V |

APPENDIX A

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS



To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment are identified by the Test Laboratory.

| | Description | Model No. | Serial No. | Manufacturer | Interval | LAST Cal. |
|----|-----------------------------------|-------------|---------------|---------------------|----------|-----------|
| 1 | EMI TEST Receiver | ESR | 101499 | Rohde & Schwarz | 1 year | Jul-17 |
| 2 | Pulse Limiter | ESH3-Z2 | 100710 | Rohde & Schwarz | 1 year | Mar-17 |
| 3 | DIGITAL THERMO HYGROMETER | TH-611 | NONE | BODYCOM | 1 year | Sep-16 |
| 4 | DTV Signal Generator | MFG-100 | 15M2002 | MFLO | 1 year | Mar-17 |
| 5 | Color TV Pattern Generator | PM-5518-TX | LO5333 | Philips | - | - |
| 6 | LISN | ESH3-Z6 | 100378 | Rohde & Schwarz | 1 year | Sep-16 |
| 7 | LISN(main) | ESH3-Z5 | 893045/017 | Rohde & Schwarz | 1 year | Mar-17 |
| 8 | LISN(sub) | ENV216 | 100408 | Rohde & Schwarz | 1 year | Sep-16 |
| 9 | ISN | ISN T800 | 27109 | TESEQ | 1 year | Jan-17 |
| 10 | ISN | ENY81-CA6 | 101565 | Rohde & Schwarz | 1 year | Jan-17 |
| 11 | CURRENT PROBE | EZ-17 | 100508 | Rohde & Schwarz | 1 year | Jan-17 |
| 12 | LISN | ESH3-Z6 | 100378 | Rohde & Schwarz | 1 year | Sep-16 |
| 13 | EMI TEST Receiver | ESCI7 | 100772 | Rohde & Schwarz | 1 year | Sep-16 |
| 14 | Amplifier (25 dB) | 8447D | 2944A07974 | HP | 1 year | Sep-16 |
| 15 | DIGITAL THERMO HYGROMETER | TESTEK-303A | TAEGUANG | - | 1 year | Mar-17 |
| 16 | STEP TRANSFORMER | INA6502 | 34270 | SCHAFFNER | 1 year | Sep-16 |
| 17 | Log.-Per. Antenna | VULP 9118 | 9118 A 401 | SCHWARZBECK | 2 year | Apr-17 |
| 18 | Biconical Antenna | VHA 9103 | VHA 9103-2315 | SCHWARZBECK | 2 year | Apr-17 |
| 19 | TRILOG Antenna | VULB9160 | 9160-3237 | SCHWARZBECK | 2 year | May-17 |
| 20 | TRILOG Antenna | VULB9160 | 9160-3237 | SCHWARZBECK | 2 year | Apr-17 |
| 21 | Amplifier (25 dB) | 8449B | 3008A00337 | HP | 1 year | Mar-17 |
| 22 | Spectrum Analyzer (~ 26.5 GHz) | E4407B | MY45108946 | Agilent | 1 year | Mar-17 |
| 23 | HORN ANTENNA | 3115 | 55005 | ETS | 2 year | May-17 |
| 24 | HORN ANTENNA | 3115 | 55005 | ETS | 2 year | Apr-17 |
| 25 | Universal Power Analyzer | PM6000 | 1.00007E+11 | Voltech Instruments | 1 year | Mar-17 |
| 26 | Reference Impedance Network | ES4152 | 9074424 | NF Corp. | 1 year | Sep-16 |
| 27 | TEST PROGRAM | AUDIX | - | e3_Ver: 5.5.201a | - | - |

APPENDIX B

PERFORMANCE CRITERIA



Performance criterion A:

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B:

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion C:

Loss of function is allowed, provided the function is self-recoverable or can be restored by the operating of the controls by the user In accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

APPENDIX C

Measurement Uncertainty

1. Conducted Emission

2. Radiated Emission



1. Conducted Emission

| Input Quantity | Probability Distribution | Probability Distribution (dB) | Standard |
|---|--|--|---|
| | | 9 kHz – 30 MHz | |
| Cable loss(RG400) | Standard Deviation(SD) | ± 0.061 | 10 th measurement |
| Receiver corrections; -Sine wave voltage -Pulse amplitude response -Pulse repetition rate response | Rectangular ($\sqrt{3}$) Rectangular ($\sqrt{3}$) Rectangular ($\sqrt{3}$) | ± 0.17 ± 0.02 ± 0.58 | Cal. Report Cal. Report Cal. Report |
| LISN corrections (ENV216) ; -Voltage division factor | Normal (k = 2) | ± 0.09 | Cal. Report |
| Mismatch ; - Receiver VRC* : $\Gamma_i = 0.09$ -LISN VRC : $\Gamma_g = 0.14(150\text{kHz})$ = 0.05(30MHz) - Uncertainty: $20\log(1 \pm \Gamma_i \Gamma_g)$ | U-type($\sqrt{2}$) | ± 0.89 | Cal. Report |
| System Repeatability | Standard Deviation(SD) | ± 0.28 | 10 th measurement |
| Combined measurement uncertainty $U_c(y)$ | Normal | + 0.73 - 0.73 | |
| Expanded measurement uncertainty (95%,Confidence level,k = 2)dB | Normal(k = 2) | + 1.46 - 1.46 | |

2.Below 1 GHz Radiated Emission

| Input Quantity | Probability Distribution | Probability Distribution (dB) | | Standard |
|---|--|------------------------------------|------------------------------------|---|
| | | Trilog | | |
| | | 3m | 10m | |
| Antenna Factor (VULB 9160) | Normal (k = 2) | 30 MHz– 1 GHz ± 2.00 | 30 MHz – 1 GHz ± 2.00 | ANT Cal. uncertainty |
| Cable loss (HFB-5010/HFC12D) | Standard Deviation(SD) | ± 0.14 | ± 0.14 | 10 th measurement |
| Receiver corrections; -Sine Wave Voltage -Pulse amplitude response -Pulse repetition rate response | Normal (k = 2) Normal (k = 2) Rectangular(√ 3) | ± 0.17 ± 0.58 ± 1.50 | ± 0.17 ± 0.58 ± 1.50 | Cal. Report Cal. Report CISPR16-4-2 |
| Antenna Directivity | Rectangular(√ 3) | ± 1.00 | ± 1.00 | CISPR16-4-2 |
| AF Height Dependence | Rectangular(√ 3) | ± 0.10 | ± 0.10 | CISPR16-4-2 |
| Phase Center Location | Rectangular(√ 3) | ± 0.20 | ± 0.20 | CISPR16-4-2 |
| Separation Distance | Rectangular(√ 3) | ± 0.30 | ± 0.30 | CISPR16-4-2 |
| Uncertainty of Site | Triangular(√ 6) | ± 2.97 | ± 2.97 | NSA |
| Mismatch ; - Receiver VRC* : Γi = 0.09 -ANT. VRC : Γg = 0.09 - Uncertainty: 20log(1± Γi Γg) | U-type (√ 2) | ± 0.54 | ± 0.54 | CISPR16-4-2 |
| Pre-amp. | Normal (k = 2) | ± 0.14 | ± 0.14 | Cal. Report |
| System Repeatability | Standard Deviation(SD) | ± 0.60 | ± 0.60 | 10 th measurement |
| Combined measurement uncertainty Uc(y) | Normal | + 1.97 - 1.97 | + 1.97 - 1.97 | |
| Expended measurement uncertainty (95%,Confidence level,k=2)dB | Normal(k = 2) | 30 MHz – 1 GHz + 3.94 - 3.94 | 30 MHz – 1 GHz + 3.94 - 3.94 | |

Note:VRC(Voltage Reflection Coefficient)

3. Above 1 GHz Radiated Emission

| Input Quantity | Probability Distribution | Probability Distribution (dB) | Standard |
|---|---|--|---|
| | | HORN | |
| Antenna Factor (ETS 3115) | Normal (k=2) (normal) | 1 GHz - 6 GHz ± 1.00 | ANT Cal. uncertainty |
| Cable loss (SUHNER MULTIFLEX microwave cables) | Standard Deviation(SD) | ± 0.32 | 10 th measurement |
| Receiver corrections; -Sine Wave Voltage -Pulse amplitude response -Pulse repetition rate response | Normal (k = 2) Normal (k = 2) Rectangular($\sqrt{3}$) | ± 0.17 ± 0.58 ± 1.50 | Cal. Report Cal. Report CISPR16-4-2 |
| Antenna Directivity | Rectangular($\sqrt{3}$) | ± 1.00 | CISPR16-4-2 |
| AF Height Dependence | Rectangular($\sqrt{3}$) | ± 0.10 | CISPR16-4-2 |
| Phase Center Location | Rectangular($\sqrt{3}$) | ± 0.20 | CISPR16-4-2 |
| Separation Distance | Rectangular($\sqrt{3}$) | ± 0.30 | CISPR16-4-2 |
| Uncertainty of Site | Standard Deviation(SD) | ± 0.13 | SVSWR 10 th measurement |
| Mismatch ; - Receiver VRC* : $\Gamma_i = 0.09$ -ANT. VRC : $\Gamma_g = 0.09$ - Uncertainty: $20\log(1 \pm \Gamma_i \Gamma_g)$ | U-type ($\sqrt{2}$) | ± 0.54 | CISPR16-4-2 |
| Pre-amp. | Normal (k = 2) | ± 0.60 | Cal. Report |
| System Repeatability | Standard Deviation(SD) | ± 0.34 | 10 th measurement |
| Combined measurement uncertainty $U_c(y)$ | Normal | + 1.73 - 1.73 | |
| Expanded measurement uncertainty (95%,Confidence level,k=2)dB | Normal(k = 2) | 1 GHz - 6 GHz + 3.46 - 3.46 | |

Note:VRC(Voltage Reflection Coefficient)

APPENDIX D

PHOTOGRAPHS



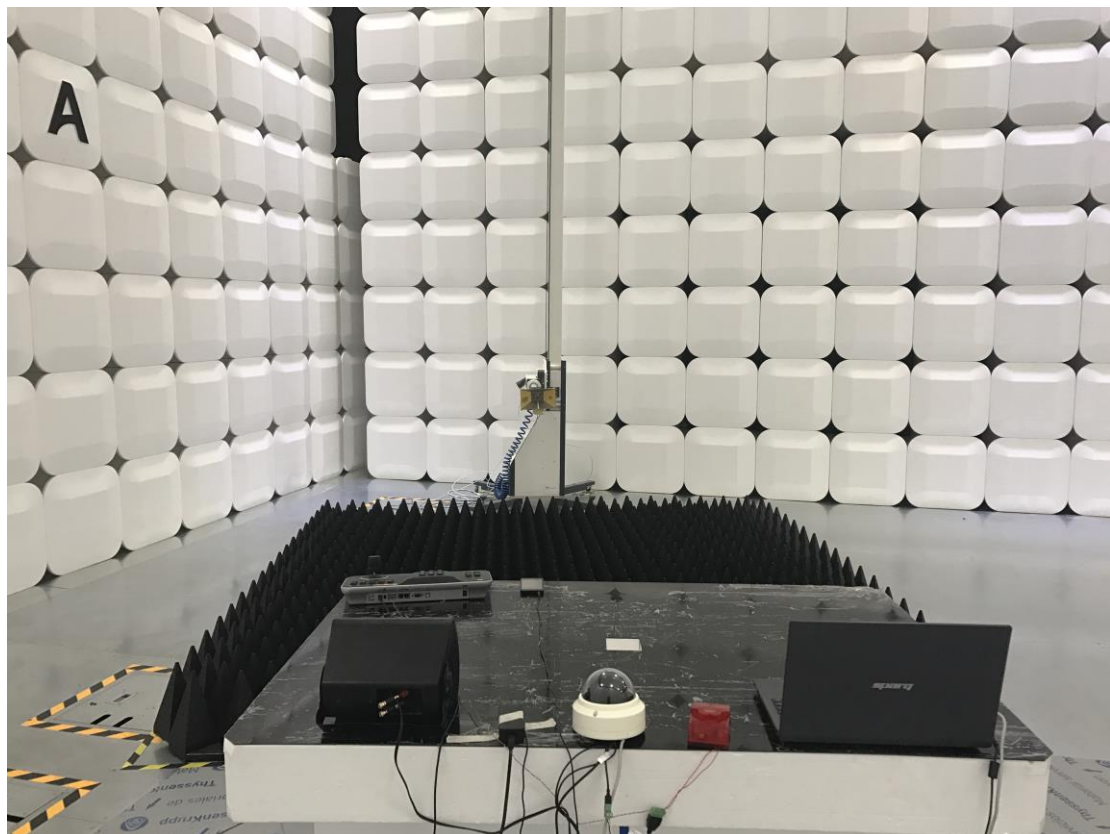
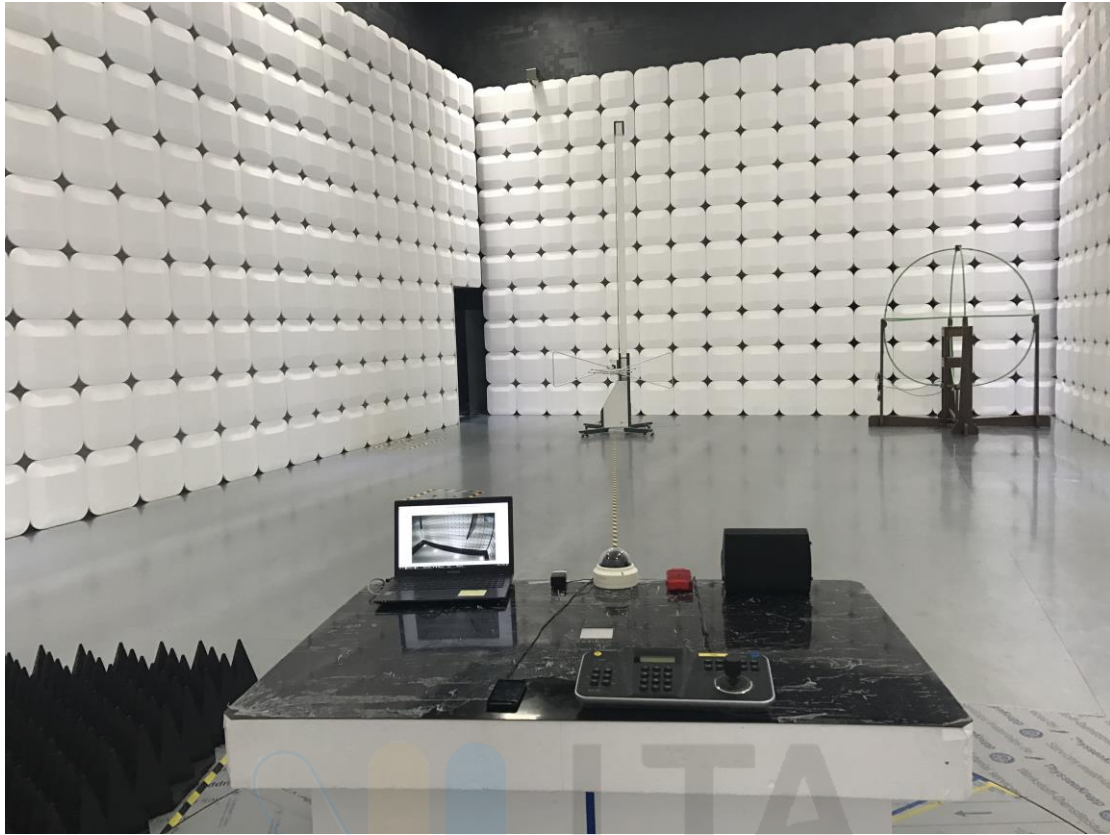
Conducted emission (Maximum emission configuration) / Capture mode (Adapter)



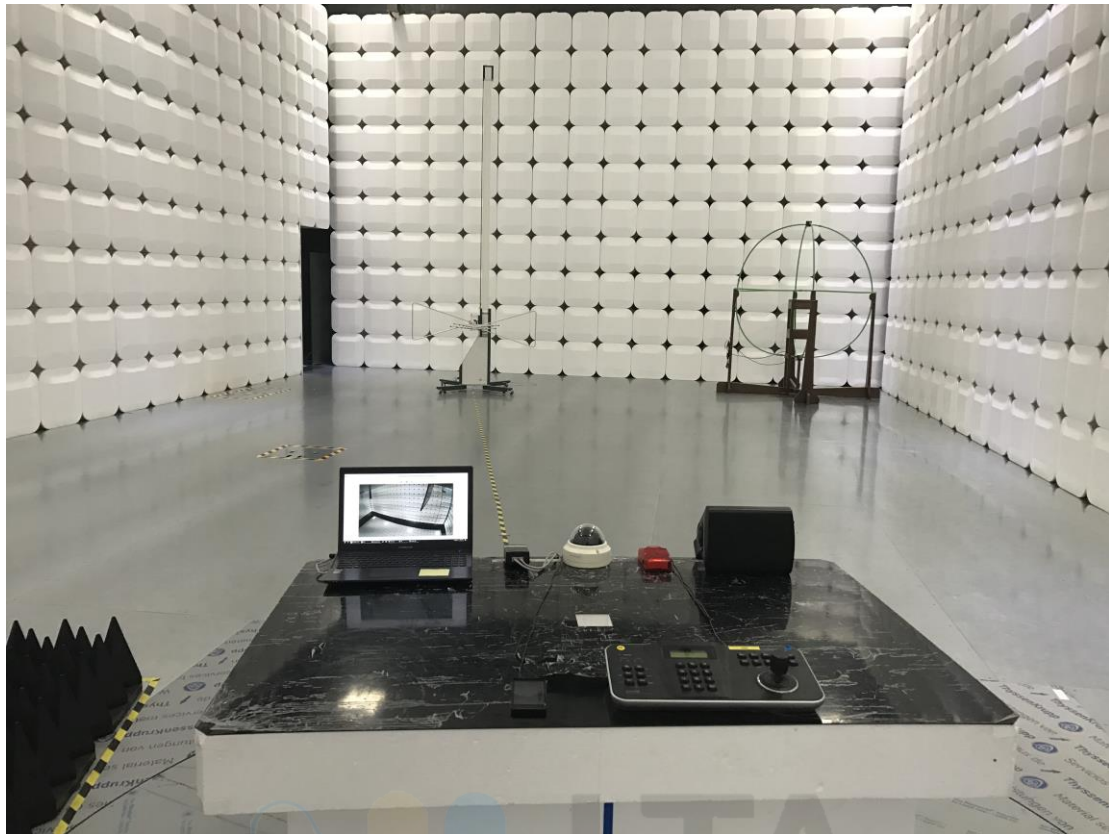
Conducted emission (Maximum emission configuration) / Capture mode (PoE)



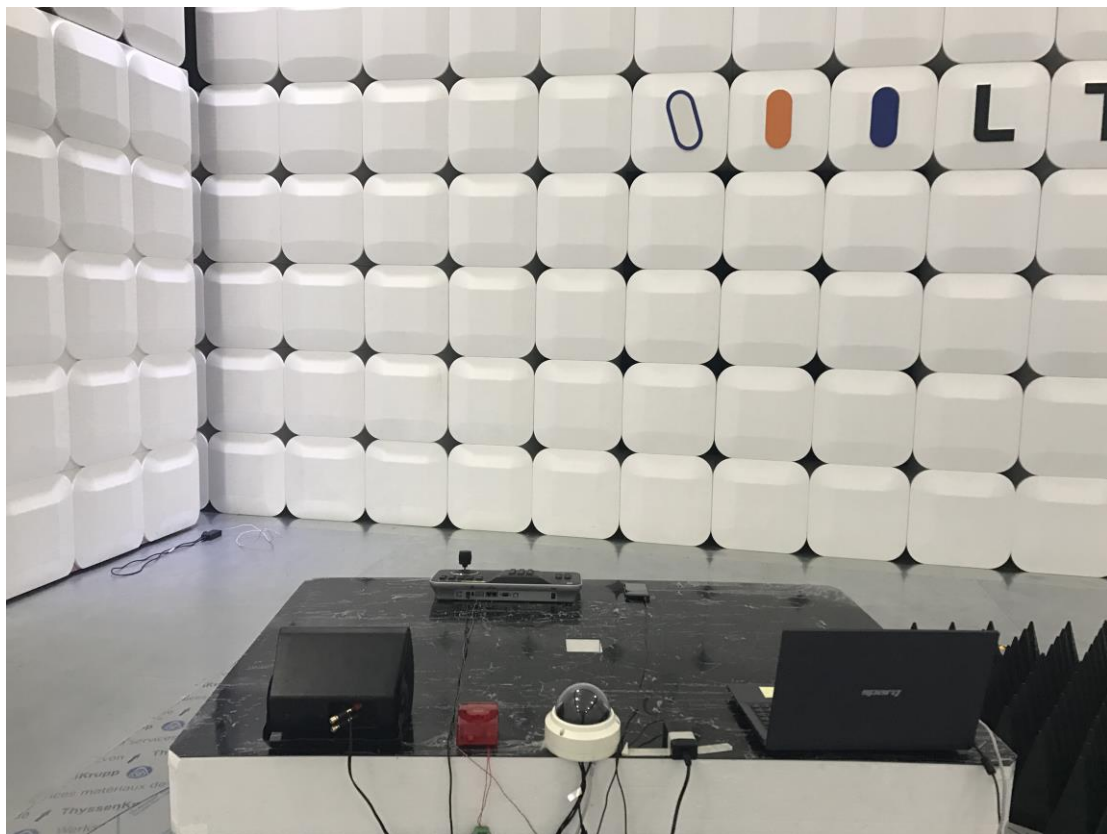
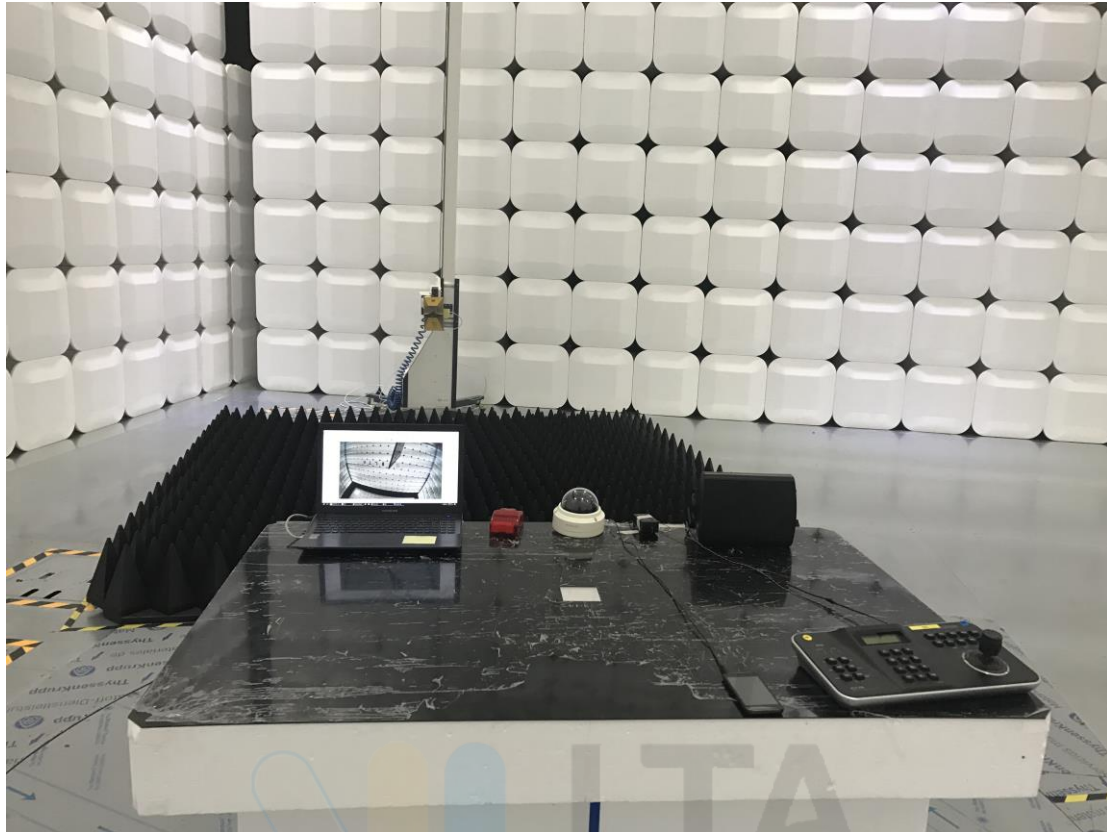
Radiated emission (Maximum emission configuration)-Below 1 GHz / Capture mode
(Adapter)



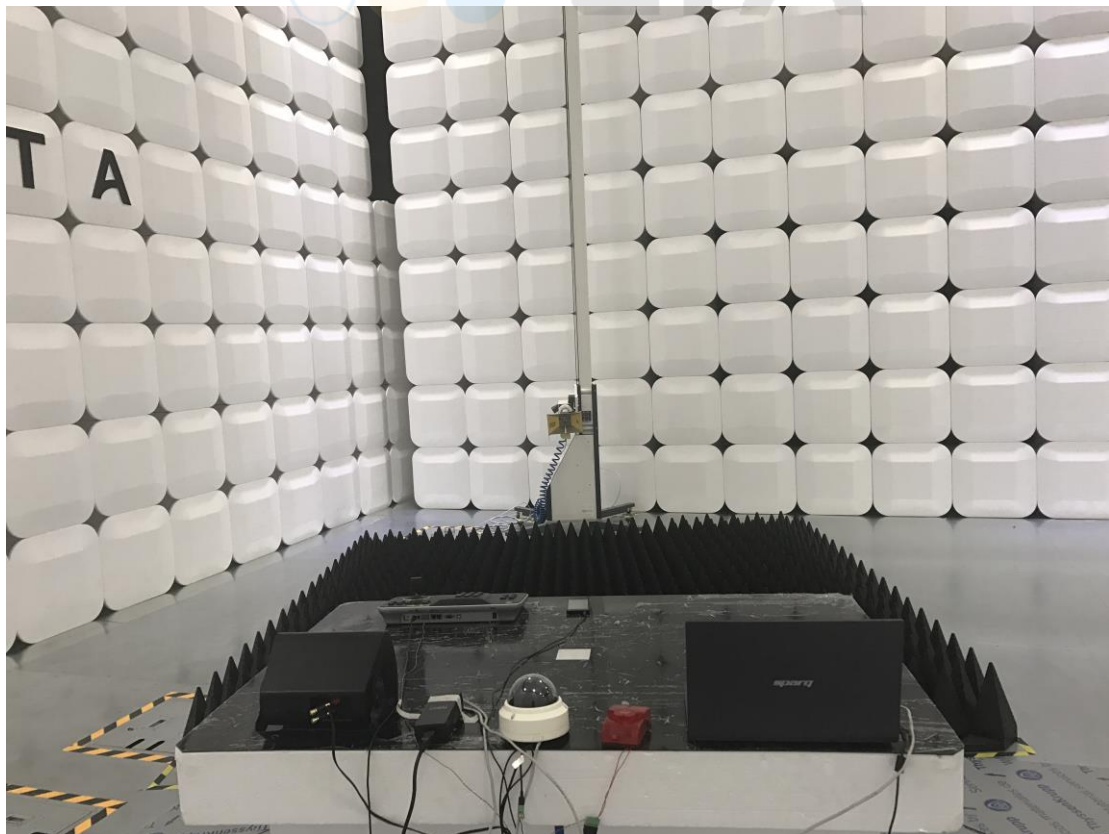
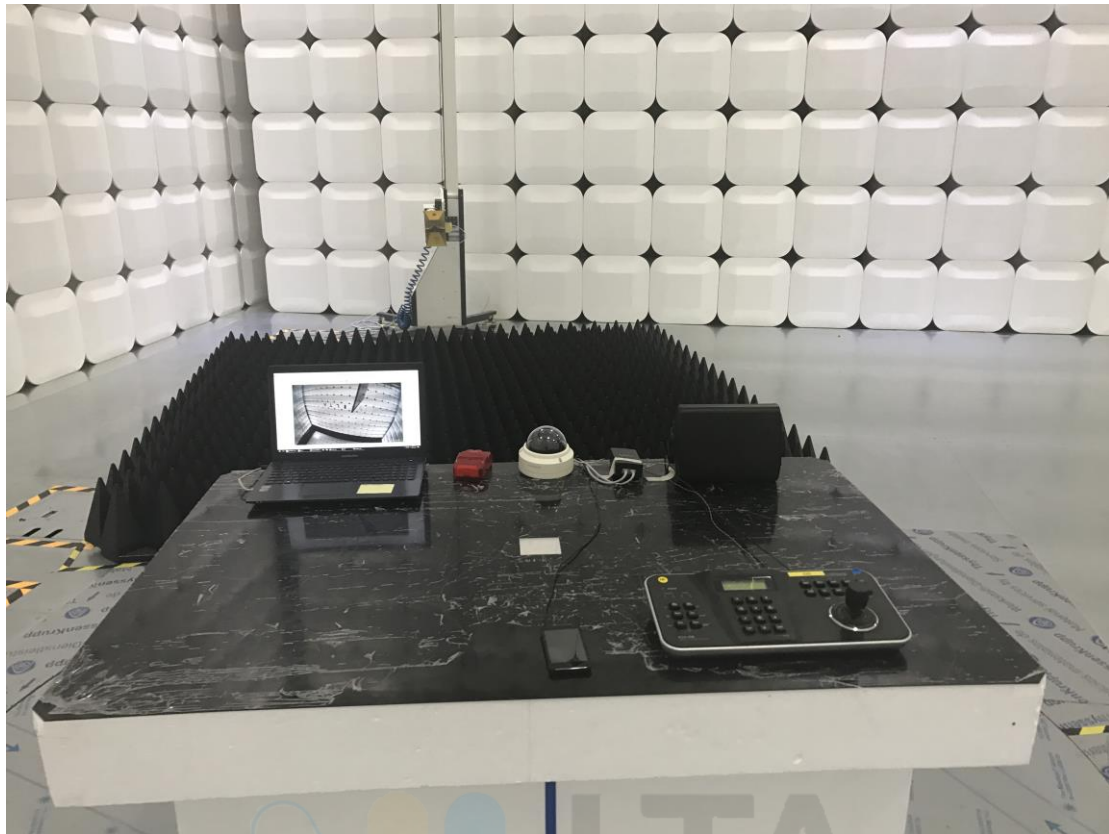
Radiated emission (Maximum emission configuration)-Below 1 GHz / Capture mode (PoE)



Radiated emission (Maximum emission configuration) – Above 1GHz / Capture mode
(Adapter)



Radiated emission (Maximum emission configuration) – Above 1GHz / Capture mode (PoE)



EUT



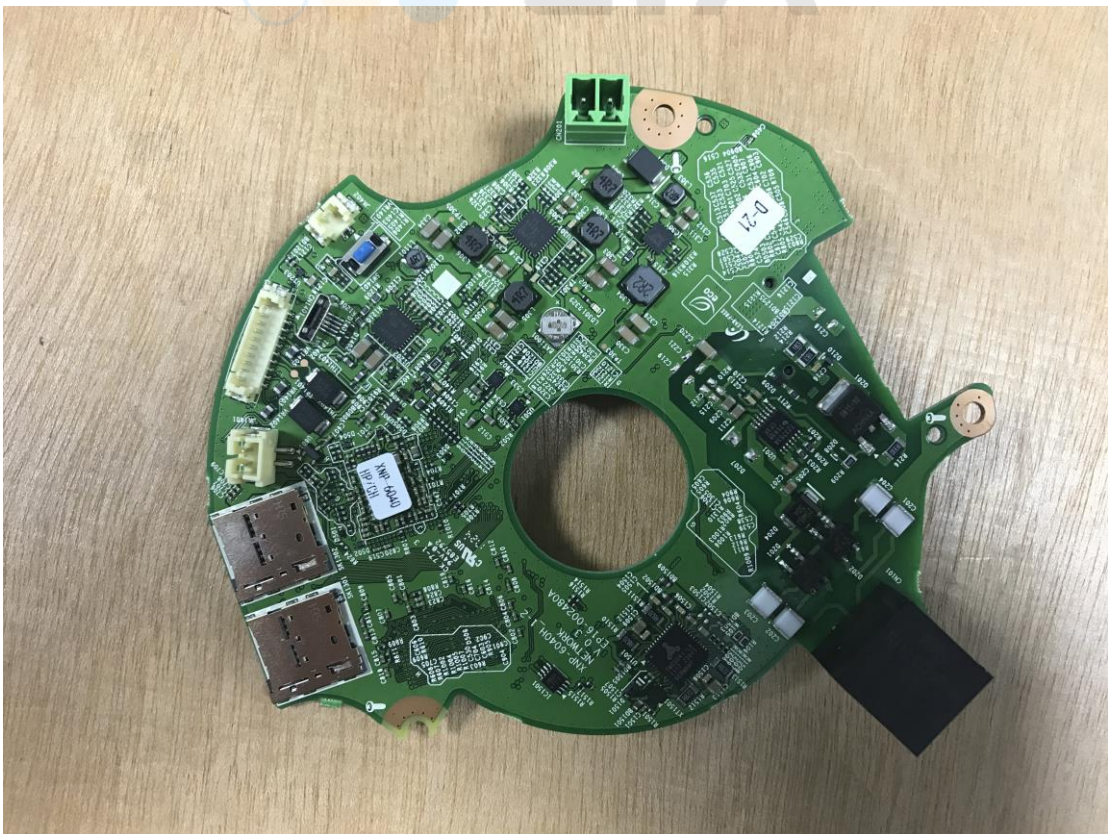
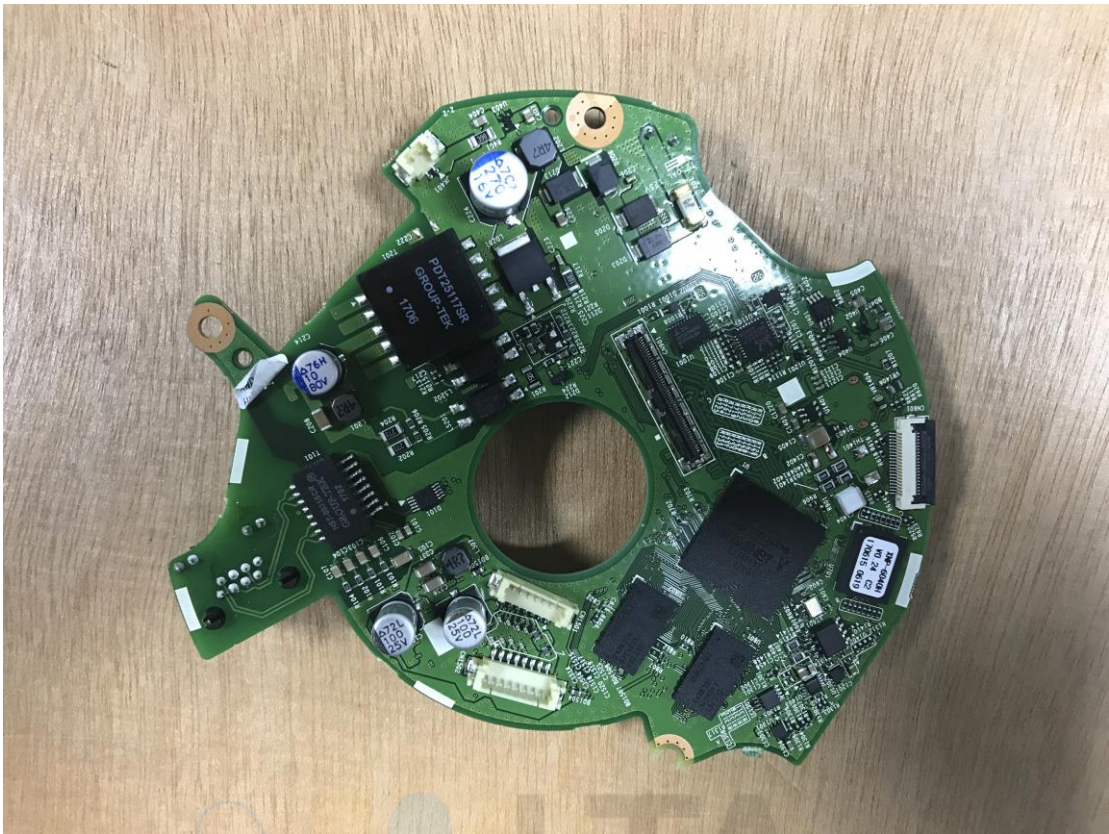
EUT



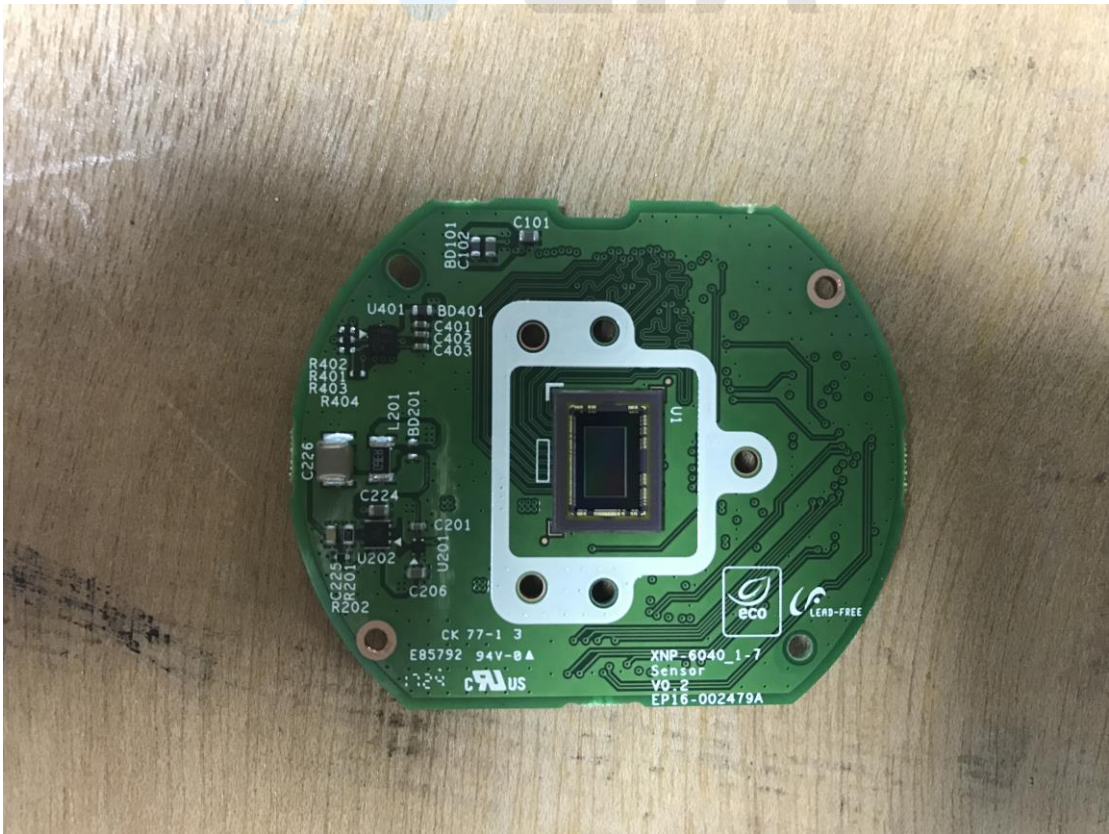
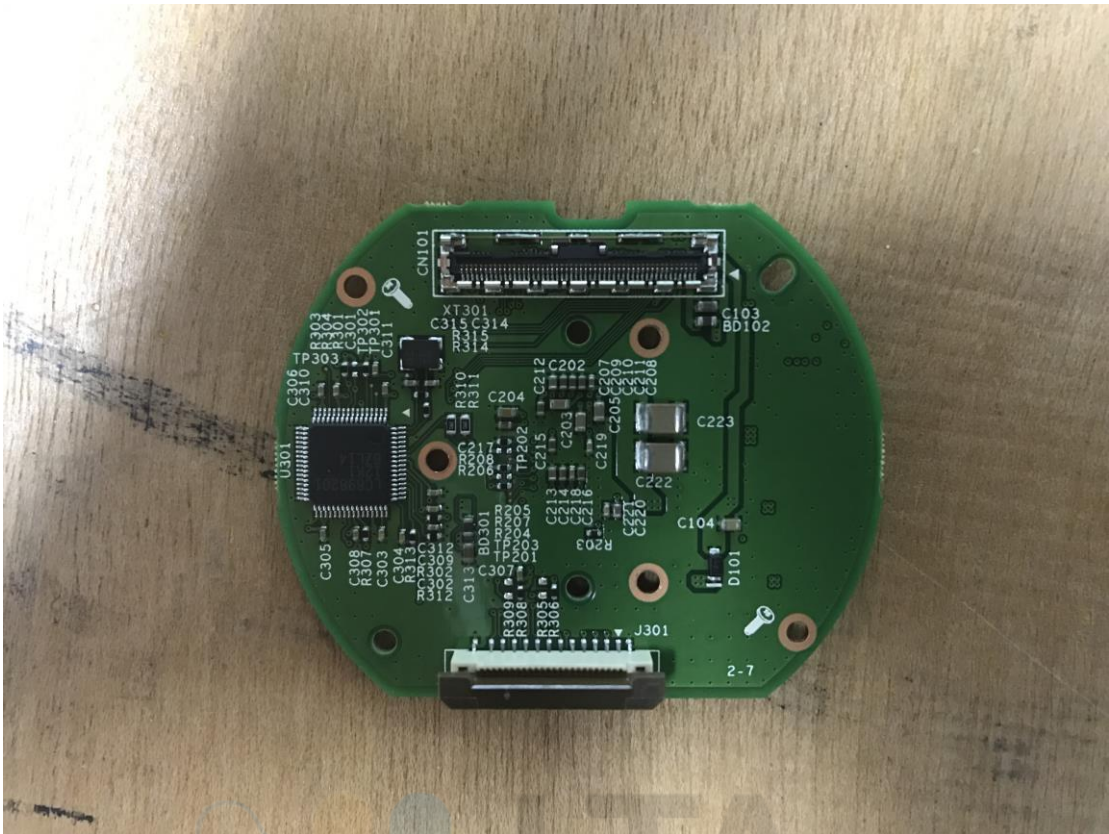
EUT



EUT



EUT



EUT

